APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,499	02/07/2006	Yue Ma	9432000246USNPB	1090

52800 7590 12/21/2006	EXAMINER
GREGORY A. STOBBS	CARTER, AARON W
5445 CORPORATE DRIVE	
SUITE 400	ART UNIT / PAPER NUMBER
TROY, MI 48098	2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

	Application No.	Applicant(s)
Office Action Summary	10/567,499	MA ET AL.
	Examiner	Art Unit
	Aaron W. Carter	2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _07 February 2006_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-49_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _1,2,9-11,13-17,21-23,30-40,42-47 and 49_ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☒ Claim(s) _3-8,12,18-20,24-29,41 and 48_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _07 February 2006_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _2/7/06_.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities:

On page 4, line 11, the name "Canagarajar" is misspelled according to the spelling on

article "A Robust Automatic Clustering Scheme for Image Segmentation Using Wavelets",

provided with this office action. The correct spelling is "Canagarajah".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1, 2, 9, 11, 13, 15, 16, 21-23, 30-34, 37, 38, 40, 42, 44-46 and 49 rejected under

35 U.S.C. 102(b) as being anticipated by US 2002/0191861 to Cheatle.

As to claim 1, Cheatle discloses an automatic image cropping system for use with a

portable device having an image capture mechanism and a limited resource for storing or

transmitting captured information (paragraph 0080 and 0081, wherein the camera corresponds

to a portable device and the memory corresponds to a limited resource for storing), the system

comprising a region of interest suggestion engine defining plural image region candidates by performing image segmentation on an image stored in digital form (Fig. 10, elements 202-214 and paragraphs 103, 130 and 133, wherein the features of interest are determined and alternative constraint set combination are performed on the image, which corresponds to image segmentation, to identify image cropping candidates each of which corresponds to a image region candidate), determining if an image region candidate is likely to be more or less interesting to a user than another image region candidate (Fig. 10, elements 202-214, and paragraph 154 and 155, wherein the penalty score is determined for each crop candidate, which corresponds to an image region candidate, and the lower the penalty the more likely the image region candidate is of interest to the user), and selecting an image region candidate determined as likely to be of most interest to the user (Fig. 10, elements 214 and paragraph 0154 and 0155, wherein the candidate region with the lowest penalty, which corresponds to the image candidate region likely to be of most interest to the user, is selected).

As to claim 2, Cheatle discloses the system of claim 1, wherein said region of interest suggestion engine measures entropies of the image region candidates and uses entropy thus measured as a measure of likelihood of user interest (paragraph 0154 and 0155, wherein penalty score corresponds to entropies).

As to claim 9, Cheatle discloses the system of claim 1, wherein said region of interest suggestion engine segments the image based on image texture and color consistency

(paragraph 128, wherein texture and color consistency are evaluated to determine the features

for use with the region of interest suggestion engine).

As to claim 11, Cheatle discloses the system of claim 1, wherein said region of interest

suggestion engine employs a fuzzy k-mean clustering method to perform the image

segmentation (paragraph 95).

As to claim 13, Cheatle discloses the system of claim 1, wherein said region of interest

suggestion engine performs color transformation on an image stored in digital form (paragraph

86, wherein color transformation is performed for example to a YCC color space format).

As to claim 15, Cheatle discloses the system of claim 1, wherein said region of interest

suggestion engine measures sizes of image region candidates relative to a common viewing

area of the image and uses relative size thus measured as a measure of likelihood of user

interest (paragraph 133, wherein constraint set include using aspect ratio and size constraints

which corresponds to using relative size thus measured as a measure of likelihood of user

interest).

As to claim 16, Cheatle discloses the system of claim 1, wherein said region of interest

suggestion engine measures locations of image region candidates relative to a common

viewing area of the image and uses relative location thus measured as a measure of likelihood

of user interest (paragraphs 133-137 and 140, wherein penalties correspond to likelihood and

they are based in part on candidate region location).

As to claim 21, Cheatle discloses the system of claim 1, wherein said engine uses camera

sensor data to determine likelihood of user interest (paragraph 133 and 140, wherein pixel data

corresponds to camera sensor data and pixel data is used to determine likelihood).

As to claim 22, Cheatle discloses an automatic image cropping method, comprising:

Performing image segmentation on an image stored in digital form thereby defining

plural image region candidates (Fig. 10, elements 202-214 and paragraphs 103, 130 and 133,

wherein the features of interest are determined and alternative constraint set combination are

performed on the image, which corresponds to image segmentation, to identify image cropping

candidates each of which corresponds to a image region candidate);

Determining if an image region candidate is likely to be more or less interesting to a user

than another image region candidate (Fig. 10, elements 202-214, and paragraph 154 and 155,

wherein the penalty score is determined for each crop candidate, which corresponds to an

image region candidate, and the lower the penalty the more likely the image region candidate is

of interest to the user); and

Selecting an image region candidate determined as likely to be of most interest to the user

(Fig. 10, elements 214 and paragraph 0154 and 0155, wherein the candidate region with the

lowest penalty, which corresponds to the image candidate region likely to be of most interest to

the user, is selected).

As to claim 23, please refer to the rejection made for claim 2 above.

As to claim 30, Cheatle discloses the method of claim 22, further comprising suggesting the selected image region candidate to a user (Fig. 10, element 214 and paragraph 0155 and 0158, wherein the selection of the candidate to a user is done in 214 and may automatically).

As to claim 31, Cheatle discloses the method of claim 30, further comprising receiving a user confirmation of the selected image region candidate (paragraph 0156, wherein the user may confirm the candidate or suggest improvements).

As to claim 32, Cheatle discloses the method of claim 31, further comprising processing the image based on the user confirmation (paragraph 0156 wherein the user may suggest improvements).

As to claim 33, Cheatle discloses the method of claim 31, further comprising segregating the selected image region candidate from at least one other part of the image in response to receipt of the user confirmation (paragraph 0156, wherein the user may suggest improvements such as more or less room in the crop limits which correspond to segregating the a part of the image from another).

As to claim 34, Cheatle discloses the method of claim 31, further comprising saving the selected image region candidate absent image contents external to the selected image region in response to receipt of the user confirmation (paragraphs 80, 81 and156, wherein it is inherent that the region inside the selected crop limits by the user are saved the memory).

As to claim 37, Cheatle discloses the method of claim 30, further comprising:

Receiving a user contradiction of the selected image region candidate; and

Selecting a new image region candidate determined as most likely to be of most interest to the user based on the user contradiction (paragraph 156, wherein the user may reject a candidate which corresponds to user contradiction and a new candidate may be evaluated using a new crop limit).

As to claim 38, please refer to the rejection made for claim 9 above.

As to claim 40, please refer to the rejection made for claim 11 above.

As to claim 42, please refer to the rejection made for claim 13 above.

As to claim 44, please refer to the rejection made for claim 15 above.

As to claim 45, please refer to the rejection made for claim 16 above.

As to claim 46, Cheatle discloses the method of claim 22, further comprising capturing an image in digital form (paragraph 86).

As to claim 49, please refer to the rejection made for claim 21 above.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

5.   Claims 10 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheatle

in view of an article entitled "A Robust Automatic Clustering Scheme for Image Segmentation

Using Wavelets" by Porter et al. ("Porter").

        As to claim 10, Cheatle discloses the system of claim 9.

        Cheatle does not disclose expressly wherein said region of interest suggestion engine

uses vectors calculated from Wavelet transform to represent texture information.

        Porter discloses a region of interest suggestion engine that uses vectors calculated from

Wavelet transform to represent texture information (Porter, Abstract).

        Cheatle & Porter are combinable because they are from the same art of image

processing and more specifically image segmentation.

        At the time of the invention, it would have been obvious to a person of ordinary skill in

the art to use the Wavelet transform to represent texture information, as taught by Porter, in the

automatic image cropping system disclosed by Cheatle.

        The suggestion/motivation for doing so would have been that using the Wavelet

transform provides a more robust image segmentation (Porter, Abstract).

Therefore, it would have been obvious to combine Cheatle with Porter to obtain the invention as specified in claim 10.

As to claim 39, please refer to the rejection of claim 10 above.

6.   Claims 14 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheatle further in view of USPN 5,341,226 to Shiau.

As to claim 14, Cheatle discloses the system of claim 13.

Cheatle does not disclose expressly wherein said region of interest suggestion engine transforms an image in RGB format into HUV (Hue, Saturation, and Intensity) format.

Shiau discloses transforming an image in RGB format into HUV (Hue, Saturation, and Intensity) format (column 5, line 64 - column 6, line 23 wherein HSI corresponds to HUV).

Cheatle & Shiau are combinable because they are from the same art of image processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to transform the image region from RGB to HUV as taught by Shiau in the automatic cropping system disclosed by Cheatle.

The suggestion/motivation for doing so would have been to represent intensity as one signal (Shiau, column 5, line 68 - column 6, line 2).

Therefore, it would have been obvious to combine Cheatle with Shiau to obtain the invention as specified in claim 14.

As to claim 43, please refer to the rejection of claim 14 above.

7.   Claims 17 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheatle in view of US Patent Publication 2003/0035580 to Wang et al. ("Wang").

As to claim 17, Cheatle discloses the system of claim 1.

Cheatle does not disclose expressly wherein the region of interest suggestion engine pre-processes the image to eliminate noise in blurred text histograms to smooth the image.

Wang discloses image segmentation comprising of pre-processes the image to eliminate noise in blurred text histograms to smooth the image (paragraph 0040 and 0041).

Cheatle & Wang are combinable because they are from the same art of image processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the pre-processing technique of the image to eliminate noise as taught by Wang in the automatic cropping system disclosed by Cheatle.

The suggestion/motivation for doing so would have been to reduce the salt and pepper noise in a scene image (Wang, paragraph 0041).

Therefore, it would have been obvious to combine Cheatle with Wang to obtain the invention as specified in claim 17.

As to claim 47, please refer to the rejection of claim 17 above.

8.   Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheatle in view

of US Patent Application Publication 2003/0122942 to Parker et al. ("Parker").

        As to claim 35, Cheatle discloses the method of claim 31.

        Cheatle does not disclose expressly further comprising transmitting the selected image

region candidate absent image contents external to the selected image region in response to

receipt of the user confirmation.

        Parker discloses transmitting the selected image region candidate absent image contents

external to the selected image region (paragraph 0027).

        Cheatle & Parker are combinable because they are from the same art of image

processing.

        At the time of the invention, it would have been obvious to a person of ordinary skill in

the art to transmit the region selected by the user using the network connection disclosed by

Parker.

        The suggestion/motivation for doing so would have been to transmit a cropped image.

        Therefore, it would have been obvious to combine Cheatle with Parker to obtain the

invention as specified in claim 35.

9.   Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheatle in view

of US Patent Application Publication 2002/0114535 to Luo.

As to claim 36, Cheatle discloses the method of claim 31.

Cheatle does not disclose expressly zooming in on the image region candidate in response to receipt of the user confirmation.

Luo discloses zooming in on the image region candidate (paragraph 0022).

Cheatle & Luo are combinable because they are from the same art of image processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to zoom in on the image region candidate, as taught by Luo, in response to user confirmation as disclosed by Cheatle.

The suggestion/motivation for doing so would have been to improve the quality of finished photographs and picture sharing experiences (Luo, paragraph 0002).

Therefore, it would have been obvious to combine Cheatle with Luo to obtain the invention as specified in claim 36.

Allowable Subject Matter

10.   Claims 3-8, 12, 18-20, 24-29, 41 and 48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 6,654,507 to Luo discloses an image segmentation and cropping method.

USPN 6,654,506 to Luo et al. discloses an image segmentation and cropping method.

US 2003/0122942 to Parker et al. discloses an image segmentation and cropping method.

US 6,545,743 to Luo et al. discloses an image segmentation and cropping method.

US 2003/0059121 to Savakis et al. discloses an image segmentation and cropping method.

US 2003/0052962 to Wilk discloses an image segmentation and cropping method.

US 2003/0044078 to Joshi et al. discloses an image segmentation and cropping method.

US 2002/0131641 to Luo et al. discloses an image segmentation and cropping method.

US 2002/0111188 to Harma et al. discloses an image segmentation and cropping method.

US 2002/0093670 to Luo et al. discloses an image segmentation and cropping method.

USPN 6,282,317 to Luo et al. discloses an image segmentation and cropping method.

USPN 6,256,414 to Mancuso et al. discloses an image segmentation and cropping method.

USPN 5,341,226 to Shiau discloses an image segmentation and cropping method.

12.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Aaron W. Carter whose telephone number is (571) 272-7445.

The examiner can normally be reached on 8am - 4:30 am (Mon. - Fri.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

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like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Aaron Carter
AU 2624